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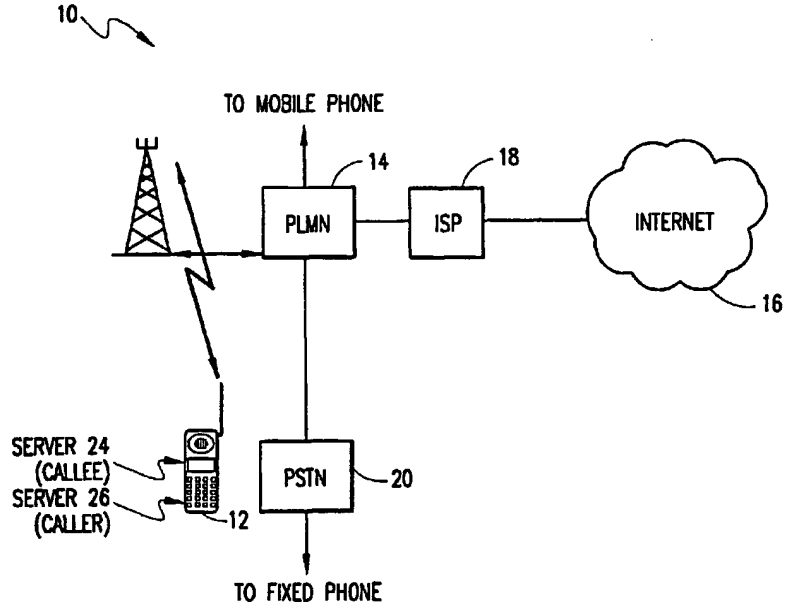
(54) Title: PERSONAL INFORMATION SERVER FOR A MOBILE PHONE



(57) Abstract: A system (10) and method are disclosed in which a server (24) and browser (26) are provided in a mobile phone (12, 22). A user of such a mobile phone (12, 22) has an assigned phone number that is mapped to that user's personal index web page. When a call is placed to that user, the caller's browser (26) is directed to and retrieves the user's personal web page. That web page can provide a significant amount of useful personal information about the user, such as, for example, "phoneto:" tags which can be used to automatically setup a call to the receiver (e.g., phone or terminal) specified by the tag.

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PERSONAL INFORMATION SERVER FOR A MOBILE PHONE

BACKGROUND OF THE INVENTION

Technical Field of the Invention

The present invention relates in general to the mobile telecommunications field and, in particular, to a web server and browser arrangement for a mobile terminal.

Description of Related Art

When one person desires to communicate electronically with another, in order to facilitate that communication, the person initiating the communication should be given as much pertinent information as possible about the other person and also about all of the communication options available. In any event, the process of gathering this information and selecting these options should be as uncomplicated as possible.

One feature of existing mobile telephones is their ability to store telephone numbers and also a limited amount of other information, such as, for example, strings of text that include the names of persons who the mobile phone user often calls. In this regard, telephone system operators commonly provide "411" or similar services, which can be used to look up persons' names, phone numbers, and (sometimes) their residential or business addresses. The mobile phone user can also be connected to a network service node that maintains a "phone book" or directory database with persons' names, numbers and addresses. In fact for the near future, when systems operating in accordance with the new Wireless Application Protocol (WAP) become available, a mobile phone user will be able to "browse" to a web page and then place a call. The WAP will allow mobile users of wireless terminals to interactively access information services and applications from their mobile phone displays. Also, in addition to the on-line address book and directory services and applications described above, the WAP will allow mobile users to access such services and applications as e-mail, call management, public

information (e.g., news, weather, traffic), sports, e-commerce, banking, and private or corporate intranet services and applications.

Nevertheless, when a mobile phone user currently wants to place a call to another person, the user may be interested in knowing just where the other person is located at that moment and where to call. In that regard, a problem with existing mobile phone systems is that users would have to maintain a relatively large number of phone numbers for each person (e.g., a different number for each location per person). However, users prefer to minimize the number of phone numbers they have to maintain per person, but the users still want to obtain as much pertinent information as possible about a person from each number maintained. On the other hand, most users prefer not to be bothered by unnecessary phone calls. As described in detail below, the above-described problems are successfully resolved by the present invention.

SUMMARY OF THE INVENTION

In accordance with a preferred embodiment of the present invention, a server and browser are provided in a mobile phone. A user of the mobile phone has an assigned phone number which is mapped to that user's (personal) index web page. When a call is placed to that user, the caller's browser is directed to and retrieves the user's personal web page. That web page can provide a significant amount of useful personal information about the user, such as, for example, a "phoneto:" tag which can be used to automatically setup a call to a receiver (e.g., phone or terminal) specified by the tag.

An important technical advantage of the present invention is that maintaining the whereabouts of a mobile phone user can be a locally administered function.

Another important technical advantage of the present invention is that there is no need to maintain a central memory location in a communication system for storing phone number configurations, because such configurations can be maintained entirely in the mobile phone's web servers.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the method and apparatus of the present invention may be had by reference to the following detailed description when taken in conjunction with the accompanying drawings wherein:

FIGURE 1 is a diagram of an exemplary system that can be used to implement a preferred embodiment of the present invention; and

FIGUREs 2A and 2B are related diagrams of exemplary methods that can be used to implement the preferred embodiment of the present invention in the exemplary system shown in FIGURE 1.

DETAILED DESCRIPTION OF THE DRAWINGS

The preferred embodiment of the present invention and its advantages are best understood by referring to FIGUREs 1-2B of the drawings, like numerals being used for like and corresponding parts of the various drawings.

Essentially, in accordance with a preferred embodiment of the present invention, a server and browser are provided in a mobile phone. The server can be a WAP server or a typical web server. The user of such a mobile phone has an assigned phone number which is mapped to that user's (personal) index web page. When a call is placed to that user, the caller's browser is directed to and retrieves the user's personal web page. That web page can provide a significant amount of useful personal information about the user, such as, for example, a "phoneto:" tag which can be used to automatically setup a call to a receiver (e.g., phone or terminal) specified by the tag.

A user can assign an address to a phone number maintained in an index web page in a number of ways. For example, if a user (callee) is attempting to reach the index web page that resides in the phone having the phone number, +46707654321, the callee can type that number in using the browser. For example, using a proxy in the user's phone, or a network server, the address of the typed phone number is translated to a PPP connection for the phone associated with the number, +46707654321. If the phone associated with the number, +46707654321, has a static Internet Protocol (IP) address, a look-up table located in memory (e.g., in the user's phone or network server) can be used to map that phone number to the correct IP

address for that phone. However, if a WAP application is used instead, the browser can convey a WAP request to the server located in the phone associated with the number, +46707654321. Once a connection is made between the server in the phone with the number, +46707654321, the user can request (using the browser) the server to send the web page (or WML page) associated with that number.

For this exemplary embodiment, a "phoneto" tag can include a unique number (e.g., +46707654321). When a caller selects (e.g., clicks on) such a retrieved "phoneto" tag, the call is placed to the telephone number, +46707654321. Notably, the number included in a user's "phoneto" tag can be protected if so desired (e.g, the user's home phone number). As such, this protection can be provided in any of a number of ways. For example, a "phoneto" tag number can be protected by use of a password. Alternatively, a "phoneto" tag number can be protected by certifying the authenticity of the phone number for the person who is attempting to make the call.

FIGURE 1 is a diagram of an exemplary system (10) that can be used to implement a preferred embodiment of the present invention. For this exemplary embodiment, system 10 includes a user's mobile phone 12 coupled by a radio air interface to a Public Land Mobile Network (PLMN) 14, which can be coupled to the Internet 16 via an Internet Service Provider (ISP) 18. Alternatively, for example, the user's mobile phone 12 could be coupled to a corporate intranet via a server. For this embodiment, the PLMN 14 is also coupled to a fixed telephone network, such as a Public Switched Telephone Network (PSTN) 20. Consequently, the user's mobile phone 12 can be connected via the PLMN 14 or PSTN 20 to a second user's mobile or fixed telephone.

FIGURE 2A is a diagram of an exemplary method (100) that can be used to implement the preferred embodiment of the present invention in the exemplary system 10 shown in FIGURE 1. Referring to FIGUREs 1 and 2A, at step 102, a first party ("caller") with mobile telephone 12 (or, for another embodiment, mobile terminal, mobile station, fixed telephone, etc.) dials a number associated with a second party's ("callee") mobile phone (fixed telephone, mobile terminal, mobile station, etc.) 22. At step 104, the caller's phone 12 setups an appropriate connection (e.g., via the PLMN and/or PSTN) to the callee's phone 22. At step 106, in accordance with the

present invention, a web (or WAP) server 24 provided in the callee's mobile phone 22 processes one or more requests made by the caller via the phone connection. For this embodiment, before processing any request made from the caller's phone 12, the web (or WAP) server in the callee's phone can request a password from the caller's phone. Once an appropriate password is received, the web (or WAP) server 24 in the callee's mobile phone 22 processes the request(s) received from the caller.

At this point, the web (or WAP) server 24 can check any stored "cookies" for information related to the caller. This function can be performed automatically by the web client, which can respond to receipt of a request from the server 24 by sending an appropriate "cookie". As such, the server 24 can request a "cookie" from the calling client's terminal. Upon receiving a requested "cookie", the server 24 can analyze the "cookie" to determine which control actions might be taken (e.g., control action(s) governing the contents of a web page returned to the caller for viewing). For example, the callee (or the callee's web or WAP server) can choose not to answer the call or to re-direct the call to another location. Furthermore, the web (or WAP) server in the callee's mobile phone 22 can also determine what information to return to the caller based on the caller's received phone number.

At step 108, the web (or WAP) server 24 in the callee's mobile phone 22 returns to the caller's phone 12 an appropriate web page (e.g., web page, WML page, or similar page). For example, the content of this web page can be based on the information included in a stored "cookie" and/or information derived from the caller's phone number. The "cookie" can be stored, for example, in the caller's terminal at an address included in the address information associated with the called terminal. At step 110, the caller's phone 12 presents the received web page to the caller via an appropriate display. In response to reviewing the presented web page, at step 112, the caller can take certain actions, such as, for example, make another phone call, leave a phone mail or text message for the callee, leave an electronic "business card," browse other users' web pages, and/or retrieve another user's business card. For this embodiment, the caller is preferably a subscriber with a terminal (fixed or mobile) that can present a web (WAP, or similar) page via a display (monitor, phone display, etc.). The caller's terminal includes a web or WAP browser 26, but another appropriate type

of browser can also be used.

FIGURE 2B is a diagram that illustrates an exemplary method for using a web server in the callee's mobile phone to create a "cookie" for storage at a caller's phone, in accordance with the embodiment shown in FIGUREs 1 and 2A. At step 114 in FIGURE 2B, the mobile phone user (e.g., callee) can input information about a specific caller to a "cookie" stored by the web server in the callee's mobile phone 22. At step 116, the web server 24 in the mobile phone stores the information input by the callee in the "cookie" associated with the specific caller. At step 118, the web server 24 sends the "cookie" (via the interconnected networks) to the caller's phone 12, where the "cookie" is stored in local memory.

Other useful information that can be stored on a user's web page in a mobile phone, in accordance with the present invention, is a list of links to other users' home pages. For example, a user can leave a voice mail message for another user via a voice mail link. These voice mail messages can be stored in a user's mobile phone, or alternatively, the user can be re-directed to a voice mail service. Alternatively, as described earlier, a user can leave a short text message for another user. Such a message can be stored in a type of "guest book" shown on the second user's home page. Also, a user's business card information can be retrieved on demand from the user's home page. Such electronic business cards can be stored locally by a user for a caller (e.g., a client) that retrieved the business card, in a manner similar to that by which business cards can be stored by existing browsers (e.g., Netscape® or Internet Explorer® browsers).

In accordance with the present invention, a mobile phone's web server can also store information about the identity of the message retriever together with additional information that can be appended by the owner of the server (e.g., topic of the discussion or call log of the message retriever). As such, the next time the user makes a call, the information stored by the server can be presented to the user. This function can be performed automatically by the web client, who responds to the receipt of a request from the web server by sending the appropriate "cookie". For example, the called party (or the called party's web server) can then choose not to answer the call or to re-direct the call to another location.

For this exemplary embodiment, as described earlier, the mobile phone's browser can be a WML type browser, which can setup a data connection to the mobile phone where the server is located. The web site can be stored in a server in the wireless network so that it is accessible even if there is, for example, a voice connection already setup with the phone. In this case, the storage can be provided as a "smart" cache (i.e., the cached version of the web site can be automatically updated).

Although a preferred embodiment of the method and apparatus of the present invention has been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it will be understood that the invention is not limited to the embodiment disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing from the spirit of the invention as set forth and defined by the following claims.

WHAT IS CLAIMED IS:

1. A telecommunication system, comprising:

a first communication terminal including browser means for browsing; and

a second communication terminal coupled to said first communication terminal by at least one telecommunication network, said second communication terminal including a data storage unit for storing personal information associated with a user of said second communication terminal, said personal information retrievable using said browser means.

2. The telecommunication system of Claim 1, wherein said data storage unit comprises a server.

3. The telecommunication system of Claim 1, wherein said data storage unit comprises a web server.

4. The telecommunication system of Claim 1, wherein said data storage unit comprises a WAP server.

5. The telecommunication system of Claim 1, wherein said browser means comprises a web browser application residing in a memory location in said first communication terminal.

6. The telecommunication system of Claim 1, wherein said browser means comprises a WML browser application residing in a memory location in said first communication terminal.

7. The telecommunication system of Claim 1, wherein said personal information comprises index web page information.

8. The telecommunication system of Claim 1, wherein said personal information comprises WAP page information associated with said user.

9. The telecommunication system of Claim 1, wherein said first communication terminal comprises a mobile phone.

10. The telecommunication system of Claim 1, wherein said second communication terminal comprises a mobile phone.

11. A communication terminal, comprising:

a data storage unit for storing personal information associated with a user of said communication terminal; and

browser means for browsing in accordance with an Internet Protocol.

12. The communication terminal of Claim 11, wherein said data storage unit comprises a server.

13. The communication terminal of Claim 11, wherein said data storage unit comprises a web server.

14. The communication terminal of Claim 11, wherein said data storage unit comprises a WAP server.

15. The communication terminal of Claim 11, wherein said browser means comprises a web browser application residing in a memory location in said communication terminal.

16. The communication terminal of Claim 11, wherein said browser means comprises a WML browser application residing in a memory location in said communication terminal.

17. The communication terminal of Claim 11, wherein said personal information comprises index web page information.

18. The communication terminal of Claim 11, wherein said personal information comprises WAP page information associated with said user.

19. A method for a first communication terminal to retrieve personal information from a second communication terminal, comprising the steps of:

said first communication terminal setting up a communication connection to said second communication terminal;

responsive to said communication connection, said second communication terminal sending web page information to said first communication terminal.

20. The method of Claim 19, further comprising the step of retrieving said web page information from a server in said second communication terminal.

21. The method of Claim 20, wherein said server comprises a web server.

22. The method of Claim 20, wherein said server comprises a WAP server.

23. The method of Claim 20, wherein the step of retrieving said web page information from said server in said second communication terminal comprises a browser retrieving said web page information.

24. The method of Claim 23, wherein said browser comprises a WML browser application residing in a memory location in said first communication terminal.

25. The method of Claim 19, wherein said personal information comprises index web page information.

26. The method of Claim 19, wherein said personal information comprises WAP page information.

27. A phone tag accessible with a browser via a web page, said phone tag for use in setting up a phone call from a sender to a receiver, comprising:

a number component; and

an address component, said number component including a telephone number associated with said receiver, and said address component associated with said number component such that said browser is operable for said sender to select said phone tag via said web page so as to setup said phone call to said receiver.

28. The phone tag according to Claim 27, wherein a predefined password is required for said sender to select said phone tag via said web page.

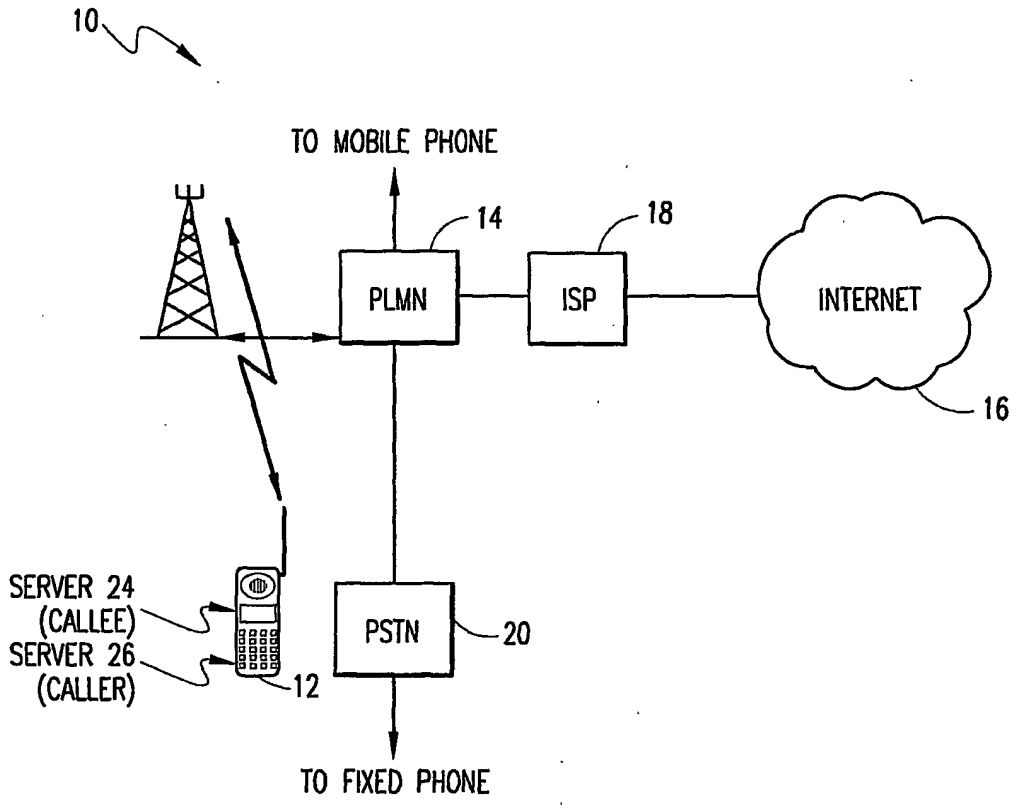
10
TO MOBILE PHONE
14
18
PLMN
ISP
INTERNET
16
SERVER 24
(CALLEE)
SERVER 26
(CALLER)
12
PSTN
20
TO FIXED PHONE

FIG. 1

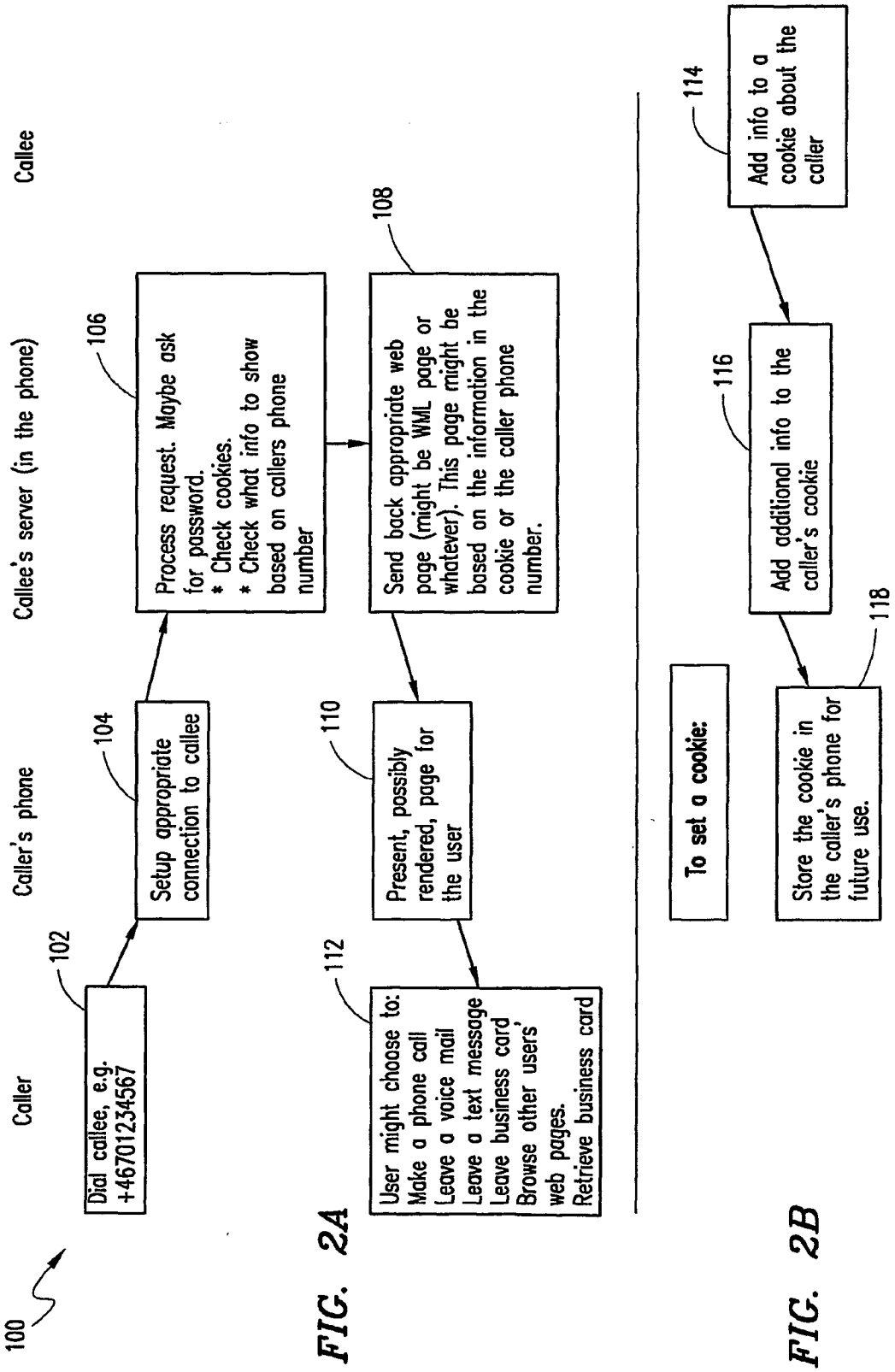
100
Caller
Caller's phone
Callee's server (in the phone)
Callee
102
Dial callee, e.g. +46701234567
104
Setup appropriate connection to callee
106
Process request. Maybe ask for password.
* Check cookies.
* Check what info to show based on callers phone number
108
Send back appropriate web page (might be WML page or whatever). This page might be based on the information in the cookie or the caller phone number.
110
Present, possibly rendered, page for the user
112
User might choose to:
Make a phone call
Leave a voice mail
Leave a text message
Leave business card
Browse other users' web pages.
Retrieve business card
To set a cookie:
114
Add info to a cookie about the caller
116
Add additional info to the caller's cookie
118
Store the cookie in the caller's phone for future use.

FIG. 2A

FIG. 2B

INTERNATIONAL SEARCH REPORT

Inten ial Application No
PCT/SE 01/00961

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/32 H04M1/725

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q H04M G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	EP 0 889 660 A (IBM) 7 January 1999 (1999-01-07) page 3, line 42 - line 54 page 4, line 20 - line 24	1-28

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search	Date of mailing of the international search report
26 June 2001	05/07/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Vaucois, X

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Interr al Application No
PCT/SE 01/00961

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
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